

PATENT SPECIFICATION (11) 1 501 198

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(21) Application No. 26361/75 (22) Filed 20 June 1975 (19)

(23) Complete Specification filed 16 June 1976

(44) Complete Specification published 15 Feb. 1978

(51) INT. CL.² B27C 5/00 B23B 51/04 B24B 19/00 23/02
B27B 5/12 B27C 3/08

(52) Index at acceptance

B3C 1A1 1A8E 1A8GX 1A8HI 1B1 1B6A2 1B6B 1B6C
1B6E 1B6G 1B6M 1B6N 1B6P 1B6Q 1B7E 1B8G
1B8X7

B3D 1D1 1D3A 1D3B
B5L 8 9

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(54) IMPROVEMENTS IN AND RELATING TO DEVICES FOR FORMING AN ANNULAR RECESS AROUND A CENTRAL HOLE

(71) We, NATIONAL RESEARCH CORPORATION, a British Corporation established by Statute, of Kingsgate House, 66-74 Victoria Street, London, S.W.1, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

10 The invention relates to devices for forming an annular rebate around a central hole. One suggestion to bring down the cost of house building, is that site activity should be concentrated on a group of houses at a time. For example, the installation of the electrical wiring and fittings for this group could all be carried out at the same time after the floors have been laid. To achieve this latter objective, it would be necessary to have a simple and fairly quick way of forming annular rebates or recesses for the wall and floor traps invariably associated with such installations.

25 According to the present invention there is provided for forming an annular rebate co-axially with a hole in a piece of material, a rebating device comprising locating means for engaging with the inner walls of the hole, means for removing material from an annular area centred on the axis of the hole, and a stop arranged to engage with the material surrounding the annular area when material in said annular area has been removed to a preselected depth to form the rebate, the means for removing material comprising one or more cutting or abrasion surfaces arranged to sweep over said annular area on rotation of the device about said axis and one or more scribing cutters adapted, on rotation of the device about said axis, to cut into the material along the outer periphery of said annular area.

40 Optionally, the device may include means

for forming the hole in the piece of material.

The device may be designed for manual operation or it may be designed for use as a power tool attachment or as a power tool in its own right.

The invention also includes an assembly including a cover plate engaging an annular rebate formed by the device of the present invention, the cover plate being secured to the piece of material in which the rebate has been formed. Preferably the exposed surface of the cover plate is flush with the material.

Embodiments of the present invention will now be described, by way of example, with reference to the accompanying drawings of which Figures 1 to 3 show a perspective view, an underneath end view, and a side view of a rebating device according to the present invention, and Figure 4 shows an exploded view of a trap assembly formed with the device of Figures 1 to 3.

Figure 5 is a part section of an embodiment designed for use as a power tool attachment;

Figure 6 is a side view of an embodiment forming a power tool in its own right;

Figure 7 is an exploded view of the attachment of Figure 5 modified to accept means for forming the hole around which the rebate is to be made; and

Figure 8 is an exploded view of one item of this last embodiment.

In the Figures, reference numeral 10 (Figures 1-3) indicates a rebating device for forming an annular rebate 12 (Figure 4) co-axially with a predrilled hole 14 in a piece of soft wood boarding or chipboard flooring 16.

The rebating device includes a locating spigot 18 for engaging the inner walls of hole 14, and two inclined and longitudinally ad-



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justable blades 20 having cutting surfaces 22. Scribing cutters 23 line up circumferentially with the outer edge of cutting surfaces 22 and a stop 24 limits the depth of rebate 12. 5 The device is completed by an end handle 26, and a manually operable ratchet drive 28. In use, the spigot 18 is inserted in hole 14 to locate the device in its correct position. Manual pressure is then applied axially of the device, on the end handle 26, and the ratchet drive handle (30) is operated to urge the device in a series of clockwise movements (as viewed in Figure 2). This causes the cutters 20 to remove material from piece 10 16 and they will continue to do this until the stop 24 engages the top surface of the material. The outer edge of the rebate so formed will have been sharply defined (see Figure 4) by the action of scribing cutters 23. The trap is completed by a cover plate 20 32 (Figure 4) secured in place by three screws.

In a typical case, the hole 14 is 100 mm in diameter and may be cut in the flooring using a power tool and a standard hole saw. A hole of this size allows access to ceiling roses, hand access for drawing wiring from one part of the building to another, etc. 25

In such a case the cover plate 32 might be 30 125 mm in diameter and 3 mm thick. Only about five revolutions of device 10 are needed to sink a rebate to this depth.

If desired the spigot 18, and/or the stop 24, and/or the cutting blades 10, and/or the scribing cutters 23, can be made replaceable, or possibly, adjustable, to deal with rebates and locating holes of other dimensions, or with different materials or situations. 35

Referring now to Figure 5, the rebating 40 device 10 is virtually identical with that shown in Figures 1 to 3 except that the end handle and ratchet drive have been omitted. As shown, device 10 accepts an adaptor 40 which can be secured in place by a grub screw 42. The shank 44 of the adaptor can be accepted by the chuck 46 of a conventional electric power drill 48. Reference numeral 50 indicates a gear reduction unit which drives the rebate device at 20 r.p.m. in response to a drill speed of 900 r.p.m. 45

Figure 6 shows a power tool 51 incorporating the rebate device 10 of the present invention. The tool includes the gear reduction unit of the previous embodiment as indicated at 50. Reference numeral 52 indicates a portion of the casing extended to serve as a second handle for the device, and reference numerals 54, 55, 56 respectively indicate cooling slots for the motor, an on/off switch, and the electric flex. 50

The embodiments illustrated in Figures 1 to 3, 5 and 6, are designed for use where a hole has been predrilled to accept the locating spigot of the device (indicated by 65 numeral 18 in Figure 1). Figure 7 shows, by way of contrast, the powertool attachment of Figure 5 modified by the inclusion of an annular replaceable cutter blade 58 for forming the hole in which the spigot 18 is to locate. The cutter blade slips on to an adaptor 60 where it can be secured by screws or rivets passing through co-operating pairs of holes 62, 64 in the two items. The adaptor fits snugly into the end recess of the rebating portion of the device where it is held in place by bolts 66, 68. As with the embodiment of Figure 5, the device is designed to accept an adaptor 40 but this is now threaded (as shown in Figure 8) to accept a guide bar 70 which fits into a predrilled guide hole in the material to be rebated to steady the attachment during the cutting operation. If desired, the bar can in part take the form of a conventional drill bit which will enable it to itself drill the guide hole for the rest of the bar. 70

Numerel 72 in Figure 7 indicates a hole in the adaptor 60. The walls of this hole will engage the bar 70 to give it extra rigidity during use. 75

Although the cutter blade attachment has only been shown in association with a modification of the power tool attachment version of the device, it will be clear that it can equally well be incorporated in any of the other versions or specific embodiments referred to in the Specification. 80

In variations of the illustrated devices, the blades 20 are replaced by abrasive members, but in most cases some sort of cutting blade will normally be preferred. Alternatively, the blades 20 could be replaced by a roughened metal annular surface. 85

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WHAT WE CLAIM IS:—

1. For forming an annular rebate coaxially with a hole in a piece of material, a rebating device comprising locating means for engaging with the inner walls of the hole, means for removing material from an annular area centred on the axis of the hole, and a stop arranged to engage with the material surrounding the annular area when material in said annular area has been removed to a preselected depth to form the rebate, the means for removing material comprising one or more cutting or abrasion surfaces arranged to sweep over said annular area on rotation of the device about said axis and one or more scribing cutters adapted, on rotation of the device about said axis, to cut into the material along the outer periphery of said annular area. 110
2. A device as claimed in Claim 1 including means for forming the hole in the piece of material. 115
3. A device as claimed in any preceding claim including means for attaching it to the chuck of a power tool so as to be rotatably driven thereby. 120

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4. A device as claimed in claim 1 or claim 2 incorporating a rotary drive motor and designed to operate as a power tool. 20

5. A device substantially as hereinbefore described with reference to, and as illustrated in, Figures 1 to 3 of the accompanying drawings. 25

6. A device as claimed in Claim 1 and substantially as hereinbefore described with reference to, and as illustrated in, Figure 5 of the accompanying drawings. 10

7. A device as claimed in Claim 1 and substantially as hereinbefore described with reference to, and as illustrated in, Figure 6 of the accompanying drawings. 15

8. A device as claimed in Claim 1 and substantially as hereinbefore described with reference to, and as illustrated in, Figures 7 and 8 of the accompanying drawings.

9. An assembly including a cover plate engaging an annular rebate formed with a device as claimed in any preceding claim, the cover plate being secured to the piece of material in which the rebate has been formed. 20

10. An assembly as claimed in Claim 9 in which the exposed surface of the cover plate is flush with the material. 25

11. An assembly as claimed in Claim 10 and substantially as hereinbefore described with reference to, and as illustrated in, Figure 4 of the accompanying drawings. 30

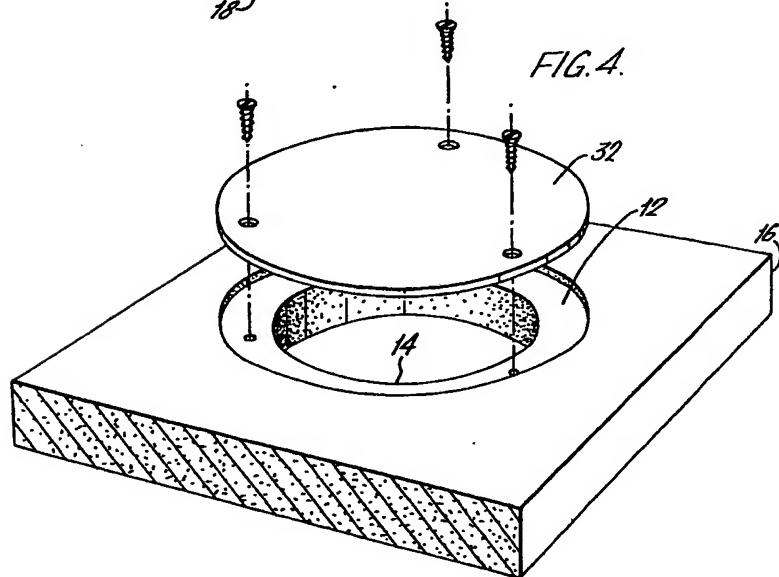
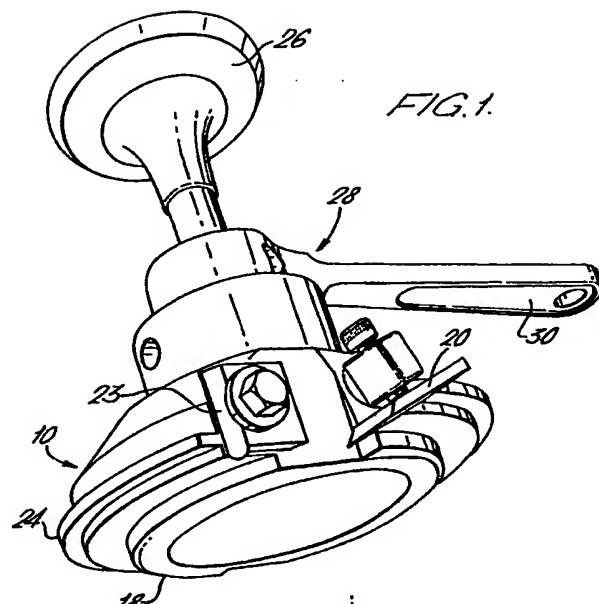
D. W. TREVOR-BRISCOE,
Chartered Patent Agent,
Agent for the Applicants.

Printed for Her Majesty's Stationery Office by Burgess & Son (Abingdon), Ltd.—1978
Published at The Patent Office, 25 Southampton Buildings, London, WC2A 1AY
from which copies may be obtained.

1501198 COMPLETE SPECIFICATION

3 SHEETS *This drawing is a reproduction of the Original on a reduced scale*

Sheet 1



1501198 COMPLETE SPECIFICATION

3 SHEETS *This drawing is a reproduction of the Original on a reduced scale*
Sheet 2

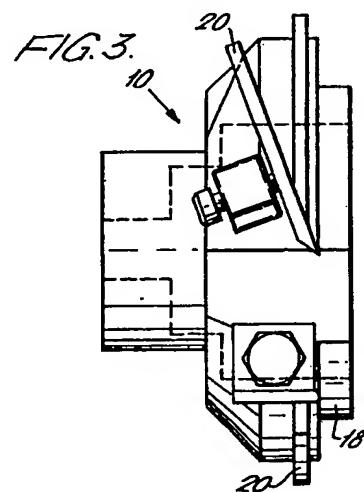
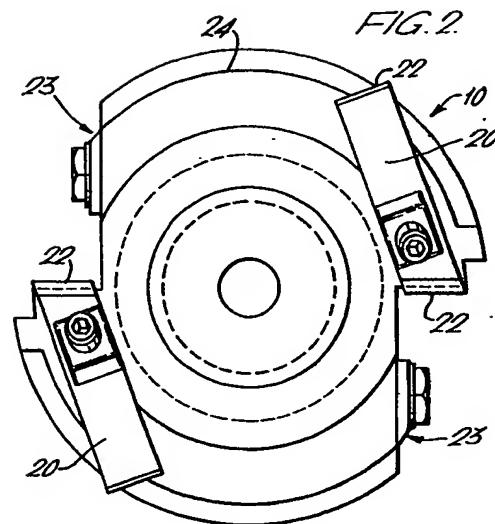


FIG.5.

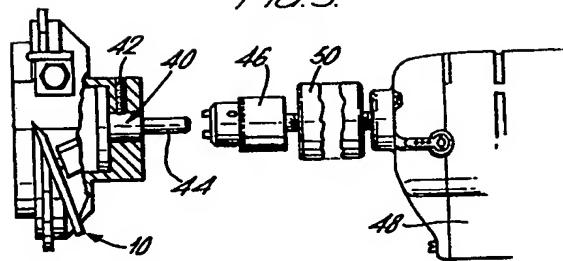


FIG.8.

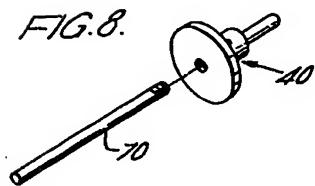


FIG.6.

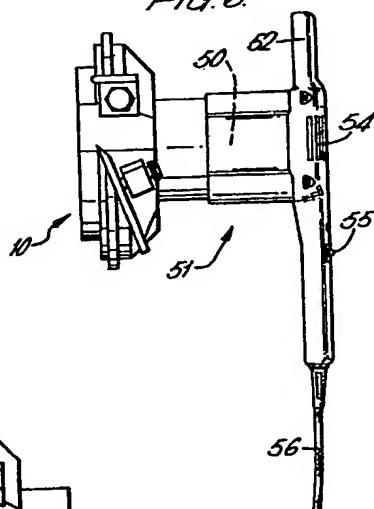


FIG.7.

